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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,576	02/09/2004	Eric Theodore Bax		1471

34847 7590 10/18/2007

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EXAMINER	
ADAMS, CHARLES D	

ART UNIT	PAPER NUMBER
2164	

MAIL DATE	DELIVERY MODE
10/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/775,576	BAX ET AL.	
	Examiner	Art Unit	
	Charles D. Adams	2164	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 July 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-9,11-16 and 18-21* is/are rejected.

7)☐ Claim(s) *3,10 and 17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6-25-07*.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Remarks

1. In response to communications filed on 23 July 2007, claims 1 and 3 are amended and claims 8-21 are added per applicant's request. Claims 1-21 are pending in the application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-2 and 5-9, 12-16, and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zien et al. (US Patent 6,556,984) in view of Ortega et al. (US Patent 6,401,084).

As to claim 1, Zien et al. teaches:

(a) obtaining by a computer the search string (see 2:39-48)

Zien et al. does not teach obtaining by the computer a threshold value.

Ortega et al. teaches and obtaining by the computer the threshold value (see 9:64-10:11).

Zien et al. as modified teaches (b) selecting by the computer a first text from the list of texts as a present computation text (see Zien et al. 2:39-48);

(c) computing by the computer, column-by-column, a grid of edit distance values between the search string and the present computation text (see Zien et al. 4:48-5:11);

(d) stopping the computing in response to computing a column whose minimum value of edit distance is at least the threshold value (see Zien et al. 4:48-5:11. A table of edit distances is created; 6:42-50, A tree with depth first search can be used. Also see Ortega et al. 10:6-11);

(e) in response to completing the computer and the computer edit distance from the present computation text to the search string being below the threshold value, generating by the computer an indication that the edit distance of the present computation text from the search string is less than the threshold value (see Zien et al. 9:38-39. A cost is returned. In addition to this, Ortega et al. stops searching when the cost becomes greater than the threshold value, 10:6-11);

(f) in response to either stopping the computing or completing the computing and the edit distance from the present computation text to the search string not being below the threshold value generating by the computer an indication that the edit distance of the present computation text from the search string is not less than the threshold value (see Zien et al. 9:38-39. A cost is returned. Also see Ortega et al. 10:6-11);

(g) in response to completing the computing, selecting by the computer a next text in the list after the present computation text, as the present computation text (see Zien et al. 4:18-30);

(h) in response to stopping the computing, selecting by the computer a next text, in the list after the present computation text, that does not share with the present

computation text a prefix corresponding to columns of the grid up to and including the column whose minimum value of edit distance is at least the threshold value, as the present computation text (see Zien et al. 7:40-65. A tree is created that corresponds to the grid, and depth first search is used on the tree. Also see Ortega et al. 10:6-11);

i) in response to step (h) returning to step (c) (see Zien et al. 4:18-30 and 6:55-7:19);

(j) in response to step (g), returning to step (c), but re using in step (c) columns of the grid computed for previous said computation text that correspond to any prefix shared by the previous computation text and the present computation text (see Zien et al. 5:21-49); and

(k) continuing to perform steps (c) through (j) until step (g) or step (h) reaches an end of the text list (see Zien et al. 5:12-20 and 6:65-7:19)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Zien et al. by the teaching of Ortega et al., since Ortega et al. teaches "an important benefit of the above-described spelling correction method over conventional spelling correction methods is that the selected replacement terms are considerably more likely to be the terms that were intended by the user. This benefit results from the above-described use of search term correlation data, and particularly correlation data that reflects historical query submissions. The method thereby increases the likelihood that the query result contain items that are of interest to the user" (see 2:35-43).

As to claim 8, Zien et al. teaches:

a computer operable to

(a) obtain the search string (see 2:39-48)

Zien et al. does not teach and the threshold value;

Ortega et al. teaches and the threshold value (see 9:64-10:11)

(b) select a first text from the list of texts as a present computation text (see Zien et al. 2:39-48);

(c) compute, column-by-column, a grid of edit distance values between the search string and the present computation text (see Zien et al. 4:48-5:11);

(d) stop the computing in response to computing a column whose minimum value of edit distance is at least the threshold value (see Zien et al. 4:48-5:11. A table of edit distances is created; 6:42-50, A tree with depth first search can be used. Also see Ortega et al. 10:6-11);

(e) in response to completing the computing and the computed edit distance from the present computation text to the search string being below the threshold value, generate an indication that the edit distance of the present computation text from the search string is less than the threshold value (see Zien et al. 9:38-39. A cost is returned. In addition to this, Ortega et al. stops searching when the cost becomes greater than the threshold value, 10:6-11);

(f) in response to either stopping the computing, or completing the computing and the edit distance from the present computation text to the search string not being below the threshold value, generate an indication that the edit distance of the present

computation text from the search string is not less than the threshold value (see Zien et al. 9:38-39. A cost is returned. Also see Ortega et al. 10:6-11);

(g) in response to completing the computing, select a next text, in the list after the present computation text, as the present computation text (see Zien et al. 4:18-30);

(h) in response to stopping the computing, select a next text, in the list after the present computation text, that does not share with the present computation text a prefix corresponding to columns of the grid up to and including the column whose minimum value of edit distance is at least the threshold value, as the present computation text (see Zien et al. 7:40-65. A tree is created that corresponds to the grid, and depth first search is used on the tree. Also see Ortega et al. 10:6-11);

(i) in response to step (h), return to step (c) (see Zien et al. 4:18-30 and 6:55-7:19);

(j) in response to step (g), return to step (c), but re-using in step (c) columns of the grid computed for previous said computation text that correspond to any prefix shared by the previous computation text and the present computation text (see Zien et al. 4:18-30 and 6:55-7:19); and

(k) continue to perform steps (c) through (j) until step (g) or step (h) reaches an end of the text list (see Zien et al. 5:12-20 and 6:65-7:19).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Zien et al. by the teaching of Ortega et al., since Ortega et al. teaches "an important benefit of the above-described spelling correction method over conventional spelling correction methods is that the selected

replacement terms are considerably more likely to be the terms that were intended by the user. This benefit results from the above-described use of search term correlation data, and particularly correlation data that reflects historical query submissions. The method thereby increases the likelihood that the query result contain items that are of interest to the user" (see 2:35-43).

As to claim 15, Zien et al. teaches:

(a) obtaining the search string (see 2:39-48)

Zien et al. does not teach and the threshold value;

Ortega et al. teaches and the threshold value (see 9:64-10:11);

(b) selecting a first text from the list of texts as a present computation text (see Zien et al. 2:39-48);

(c) computing, column-by-column, a grid of edit distance values between the search string and the present computation text (see Zien et al. 4:48-5:11);

(d) stopping the computing in response to computing a column whose minimum value of edit distance is at least the threshold value (see Zien et al. 4:48-5:11. A table of edit distances is created; 6:42-50, A tree with depth first search can be used. Also see Ortega et al. 10:6-11);

(e) in response to completing the computing and the computed edit distance from the present computation text to the search string being below the threshold value, generating an indication that the edit distance of the present computation text from the search string is less than the threshold value (see Zien et al. 9:38-39. A cost is returned.

In addition to this, Ortega et al. stops searching when the cost becomes greater than the threshold value, 10:6-11);

(f) in response to either stopping the computing, or completing the computing and the edit distance from the present computation text to the search string not being below the threshold value, generating an indication that the edit distance of the present computation text from the search string is not less than the threshold value (see Zien et al. 9:38-39. A cost is returned. Also see Ortega et al. 10:6-11);

(g) in response to completing the computing, selecting a next text, in the list after the present computation text, as the present computation text (see Zien et al. 4:18-30);

(h) in response to stopping the computing, selecting a next text, in the list after the present computation text, that does not share with the present computation text a prefix corresponding to columns of the grid up to and including the column whose minimum value of edit distance is at least the threshold value, as the present computation text (see Zien et al. 7:40-65. A tree is created that corresponds to the grid, and depth first search is used on the tree. Also see Ortega et al. 10:6-11);

(i) in response to step (h), returning to step (c) (see Zien et al. 4:18-30 and 6:55-7:19);

(j) in response to step (g), returning to step (c), but re-using in step (c) columns of the grid computed for previous said computation text that correspond to any prefix shared by the previous computation text and the present computation text (see Zien et al. 4:18-30 and 6:55-7:19); and

(k) continuing to perform steps (c) through (j) until step (g) or step (h) reaches an end of the text list (see Zien et al. 5:12-20 and 6:65-7:19).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Zien et al. by the teaching of Ortega et al., since Ortega et al. teaches "an important benefit of the above-described spelling correction method over conventional spelling correction methods is that the selected replacement terms are considerably more likely to be the terms that were intended by the user. This benefit results from the above-described use of search term correlation data, and particularly correlation data that reflects historical query submissions. The method thereby increases the likelihood that the query result contain items that are of interest to the user" (see 2:35-43).

As to claims 2, 9, and 16, Zien et al. as modified teaches further comprising:

Ordering the test list in a sequence to place texts with shared prefixes adjacent one to another in the sequence (see Zien et al. Figures 3A-3B and 6:65-7:19).

As to claims 5, 12, and 19 Zien et al. as modified teaches:

wherein the columns of the grid correspond to characters of the computation text and rows of the grid correspond to characters of the search string (see 4:57-62), and wherein the step of computing comprises the steps of:

re-using a column of the grid of the previous computation text for an individual column of the grid of the present computation text, in response

to the present computation text not being a first said selected computation text and a preceding column of the grid of the present computation text having same edit distance values as a preceding column of the grid of the previous computation text (see Zien et al. 5:50-63), and at least one of the following conditions being true:

the character corresponding to the individual column of the grid of the present computation text and the character corresponding to the column of the previous computation text are a same character (see 5:33-63),

the search string lacks the character corresponding to the individual column of the grid of the present computation text and the character corresponding to the column of the previous computation text; and

otherwise computing the individual column of the grid of the present computation text (see Zien et al. 6:42-50).

As to claims 6, 13, and 20, Zien et al. as modified teaches further comprising:

Prior to step (b), sorting the texts in the list in lexicographical order (see Figures 3A and 3B, and 6:65-7:19).

As to claims 7, 14, and 21, Zien et al. as modified teaches wherein:

Computing comprises

using dynamic programming to perform the computing (see Zien et al. 1:62-67).

4. Claims 4, 11, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zien et al. (US Patent 6,556,984) in view of Ortega et al. (US Patent 6,401,084), and further in view of Nanjo et al. (US Patent 5,778,361).

As to claims 4, 11, and 18, Zien et al. as modified teaches wherein the columns of the grid correspond to characters of the computation text and rows of the grid correspond to characters of the search string (see 4:57-62), the method further comprising the steps of:

Zien et al. does not teach making an alternative list of texts to an original said list of texts in which each occurrence in the texts of a character in a set of characters is replaced by a determined character in the set;

Nanjo et al. teaches making an alternative list of texts to an original said list of texts in which each occurrence in the texts of a character in a set of characters is replaced by a determined character in the set (see 13:1-20);

Zien et al. as modified teaches:

in response to the search string lacking all characters in said set of characters, using the alternative list of texts rather than the original list of texts to identify those texts whose edit distance from the search string is less than the threshold value (see Nanjo et al. 13:25-60. If the type is not hiragana, the normalized index is searched); and

in response to the search string not lacking all characters in said set, using the original list of texts to identify those texts whose edit distance from the search string is less than the threshold value (see Nanjo et al. 17:13-25. If the search string is hiragana, the original list of texts may be directly searched). .

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified Zien et al. in view of Nanjo et al., since Nanjo et al. teaches "an improved method and system for fast indexing and searching for documents encoded in compound word languages" (see 4:37-39) and "a content index creating and searching system that can be readily incorporated into existing computer-based indexing and searching systems" (see 4:45-48).

Allowable Subject Matter

5. Claims 3, 10, and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

6. Applicant's arguments filed 25 June 2007 have been fully considered but they are not persuasive.

Applicant argues that Zien et al. teaches to fully compute the grid "until the problem is finally solved". In response to this argument, Examiner notes that Ortega et al. is relied upon to show that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have stopped calculating once a threshold is reached (see 10:6-11). As shown by both the pruning of Tomikawa et al. and the threshold of Ortega et al. it is a well known technique in the art to stop calculating a problem once a cost threshold has been reached.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles D. Adams whose telephone number is (571) 272-3938. The examiner can normally be reached on 8:30 AM - 5:00 PM, M - F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Rones can be reached on (571) 272-4085. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

C. Rones

CHARLES RONES
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cj